IN ACCORDANCE WITH NCC VOLUME 2 (SECTION P3.10.1), THIS PRODUCT SATISFIES PERFORMANCE REQUIREMENT P2.1.1 FOR CONSTRUCTION IN A HIGH WIND AREA

SPECIFICATION

This data sheet covers the use of various fibre-cement cladding products in applications to provide structural bracing capacity, also known as racking shear capacity, against lateral forces in medium gauge steel-framed and timber-framed structures.

There are external cladding products 6mm HardieFlex™ sheet, 6mm Versilux® sheet, 7.5mm HardieTex™ sheet, 7.5mm HardiePlank™ cladding or 9mm Primeline™ weatherboards, internal lining product 6mm Villaboard and the purpose-made 5.5mm HardieBrace™ sheet.

***Note [1]**: 6mm JHFC in Tables 1 and 2 denotes any James Hardie fibre-cement cladding sheet of 6mm thickness or greater. A 9mm thick sheet may therefore be considered as being at least equivalent.*

This data sheet must be read in conjunction with current James Hardie product literature (currently "External Cladding Technical Specification" and the "Structural Bracing Application Guide") as well as the other design data sheets in this same DTC series for the individual applications and/or products.

FRAMING & SHEET INSTALLATION

First determine the required stud spacing for the design wind load from the other design data sheets in this same DTC series. Install sheets vertically or horizontally to steel or timber stud-frames as per the product literature and in accordance with the fastener spacing given in Tables 1 and 2. All sheet edges must be fully supported. Set joints where required to attain the design capacity.

Framing – Steel

The steel wall frame must be in accordance with AS 3623: 1993 "Domestic Metal Framing". Studs shall be rolled steel sections not exceeding 2mm in thickness.

Provide M12 minimum hold-down bolts with 75 x 70 x 6mm distribution washers at 900mm centres and within 70mm of the face of steel studs.

Framing – Timber:

Use of timber framing to be in accordance with AS 1684: 2010 "Residential timber-framed construction" and framing manufacturer's specifications. Use seasoned timber or else unseasoned hardwood minimum F14 grade. LVL timber may be used.

Provide anchor rods and tie-down bolts to timber frame in accordance with AS 1684.3: 2010; anchors rods not to be more than 2.4m apart.

FIXING / FASTENERS

Select fastener type from the other James Hardie DTC sheets, but to be minimum Class 3 finish.

Tables 1 and 2 outline the maximum sheet fastener spacing, but verify this against the other design data sheets in this same DTC series so as to comply with the wind load design requirements for external cladding. The lesser spacing must be applied.

***Note [2]**: Fastener configuration A/B/C (mm) in Tables 1 and 2 denotes spacing along A top and bottom plates, B vertical edges of sheet and C intermediate studs (ie body of sheet).*

For any other Hardie cladding product not listed in these tables (eg Scyon™ Linea™ weatherboards and Scyon™ EasyLap™ panel), refer to the individual DTC data sheet for that product, if it exists.

TABLE 1: ULS Design Bracing Capacity of Fibre-Cement Cladding on Medium Gauge Steel Framing

Material	Fixing Details	Screw Spacing A/B/C (mm) see Note [2]	Stud Spacing (mm)	Design Capacity (kN/m)
External Wall Systems with JHFC Cladding on One Side		**1.6mm Gauge Steel**		
5.5mm Hardiebrace sheet	Vertical joints (if any) not set	100/100/150	450	8.5
			300	8.8
7.5mm HardieTex base sheet	Vertical joints (if any) not set	200/200/200	450	5.1
6mm HardieFlex sheet (or 6mm JHFC, see Note [1])	Vertical joints (if any) not set	200/200/200	450	6.0
			300	7.5
7.5mm HardiePlank cladding or 9mm Primeline weatherboards		Limitation [2]: Screw must pass through both planks	450	2.4
			300	3.6
External Wall Systems with JHFC Cladding on Both Sides		**1.6mm Gauge Steel**		
6mm HardieFlex sheet or 7.5mm HardieTex base sheet (or 6mm JHFC)	Internal lining with 6mm Villaboard with vertical joints (if any) not set	200/200/200	450	7.8
			300	11.0
7.5mm HardiePlank cladding or 9mm Primeline weatherboards	Internal lining with 6mm Villaboard with vertical joints (if any) not set	Limitation [2]: Screw must pass through both planks. Internal lining as above.	450	6.7
Internal Wall Systems		**1.2mm Gauge Steel**		
6mm Villaboard or Versilux sheet (or 6mm JHFC)	Single-sided, vertical joints (if any) not set	200/200/200	450	5.8
	Double-sided, vertical joints (if any) not set	200/200/200	450	6.0

TABLE 2: ULS Design Bracing Capacity of Fibre-Cement Cladding on Timber Framing with Cyclone Anchor Rods

Material	Fixing Details	Nail Spacing A/B/C (mm) see Note [2]	Stud Spacing (mm)	Design Capacity (kN/m)
5.5mm HardieBrace sheet	One side of frame only	100/100/150	450 or 600	6.6
5.5mm HardieBrace sheet	One side of frame only with internal lining of 6mm JHFC vertical (joints not set) or horizontal with joints set	100/100/150 ext 150/150/150 int	450 or 600	10.0
6mm JHFC (see Note [1])	As above	150/150/150	450 or 600	5.3
6mm JHFC	Double-sided vertical (joints not set) or horizontal with set joints	150/150/150	450 or 600	7.3
7.5mm HardiePlank cladding or 9mm Primeline weatherboards	One side of frame only	Limitation [2]: Screw must pass through both planks	450 or 600	2.4
	With internal lining of 6mm JHFC vertical (joints not set) or horizontal with joints set	Limitation [2]: Screw must pass through both planks. Internal lining as above.	450 or 600	6.6

Product Name:
STRUCTURAL BRACING CAPACITY OF FIBRE-CEMENT CLADDING

Product Description:
Various External & Internal Claddings

Manufacturer's Name:
James Hardie Australia Pty Ltd
10 Colquhoun Street, Rosehill NSW 2142

Design Criteria:

[1] General
All design and construction must comply with the appropriate requirements of the current Building Code of Australia (BCA) and other applicable regulations and standards.

[2] Wind Loading
The wind forces to be resisted by the cladding configurations given in **Table 1** for steel framing and **Table 2** for timber framing with steel cyclone rods must be derived from AS 4055: 2006 "Wind Loads for Housing" or AS/NZS 1170: 2011 Part 2 "Wind Actions".

[3] Design Capacity
The Ultimate Limit State (ULS) design capacity of the various systems given in Table 1 and 2 implicitly include an ULS material capacity reduction factor ('phi') and no further factoring of the design capacity is needed.

For riveted frames of equivalent gauge, racking capacities given in Table 1 must be multiplied by a factor of 0.8.

Limitations:

[1] The minimum length of a bracing panel shall be 900mm for which the racking capacity is 0.9 times the tabulated values. Maximum wall length to which these capacities apply is 3.6m.

[2] Bracing capacity can be claimed for plank and weather-board cladding only if fasteners pass through both planks or there are two fasteners per plank for width of plank 230mm or greater.

[3] HardieBrace sheets must not be used as exposed, finished, external cladding.

[4] Fasteners: All fasteners must be driven flush. Do not fix fasteners closer than 12mm from panel edges, or closer to 50mm from sheet corners.

Accepted for Inclusion

DTCM ref: M/274/01

Chairman's Signature:

Chairman's Name: STEVEN J EHRLICH

Date of Approval: 30/07/2015

Expiry Date: 30/07/2020

Notes covering basis of DTC (relevant test reports etc):

The nominated structural capacity of the system is based on the following documentation:

[1] James Hardie Submission to Cardno Engineers dated 28 August 2010 "Certification of New James Hardie Data Sheet for Structural Bracing in the NT DTC Manual".

[2] James Hardie literature "Structural Bracing Application Guide" current edition dated March 2010.

[3] James Hardie Submission to Cardno MBK Engineers dated 1 February 2001 "Derivation of Racking Design Capacities for James Hardie Fibre-Cement Cladding Materials on Timber Frames with Cyclone Rods".

[4] James Hardie Test Report "Bracing Shear Testing of Fibre-Cement-Clad Timber-Frame Wall Sections", 1989.

[5] Cyclone Structural Testing Station Report No.TS 457 dated 20 October 1995 "Racking Strength of James Hardie Cladding Materials on Steel Wall Frames".

*Design Engineers Certification

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